Newsletter di Archeologia CISA, Volume 10, 20219, pp. 265-284

ITALIAN ARCHAEOLOGICAL EXPEDITION TO THE EASTERN SUDAN OF THE UNIVERSITÀ DEGLI STUDI DI NAPOLI "L'ORIENTALE" AND ISMEO. PRELIMINARY REPORT OF THE 2019 FIELD SEASONS

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Introduction

The goal of the January-February and November-December 2019 field seasons of the Italian Archaeological Expedition to the Eastern Sudan of the Università degli Studi di Napoli "L'Orientale" and of the ISMEO - Associazione Internazionale di Studi sul Mediterraneo e l'Oriente was the continuation of the investigations at site UA50 and in the western sector of site K1 (Mahal Teglinos), one of the major archaeological sites of Eastern Sudan (Fig. 1)[1].

These two tasks were regarded as a priority because UA50 is affected by the implementation of the agricultural scheme in the region between the Gash and the Atbara (Upper Atbara Agricultural Irrigated Scheme), while the western sector of K1 was affected by intense erosion due to the heavy rains of the last years (on this point see also the Appendix by Stefano Costanzo). Moreover, both these sites were selected for investigations also because they could be significant for the research project of the Expedition, which is aimed at getting a better knowledge of the relations between Eastern Sudan and Upper Nubia, as well as to investigate the possible relations between the cultures of Eastern Sudan and the Red Sea coast *via* the Eastern Desert in ancient times (Manzo 2012, 314; 2014a, 1149-1152; 2017a, 7; Manzo *et alii* 2011, 1-2). According to the surface finds and test excavations conducted at UA50 in 2015, 2016, and 2017, this site could also provide insights into the style of life and adaptive strategies of the human groups inhabiting the region in the 6th and 5th millennium BC (Manzo 2016, 194-195; Manzo 2018b, 287-288).

In the January-February and November-December 2019 field seasons, in the framework of the collaboration between "L'Orientale" and ISMEO, the National Corporation for Antiquities and Museums (NCAM), the University of Khartoum and the Regional Government of the Kassala State, a field school for theoretical and practical training in archaeology took place as well. Four junior staff members of the cultural office of the Regional Government of the Kassala State, seven Italian

[1] The fieldwork took place from January 15 to February 11 and from November 23 to December 22. In the January-February field season the team consisted of Andrea Manzo, archaeologist, director of the project and ceramic analyst (Università degli Studi di Napoli "L'Orientale"), Gilda Ferrandino, field director (Università degli Studi di Napoli "L'Orientale"), Elena D'Itria, senior archaeologist (Università degli Studi di Napoli "L'Orientale"), Francesco Michele Rega, PhD candidate and lithic analyst (Università degli Studi di Napoli "L'Orientale"), Stefano Costanzo, graduate student and geoarchaeologist (University of Milan), Giusy Capasso, student specializing in physical anthropology (University of Padua), Enrico Giancristofaro and Gianmarco Melito, students (Università degli Studi di Napoli "L'Orientale"), Ezzeldin Abdelrahim Omer Hajajj and Yosif Mohammed Yosif Mohammed, MA students (University of Khartoum), Roua Mohammad Ali Idriss, Suzan Ibrahim Nafe Khalafalla, Rufida Salih Mohammed Salih and Ahmed Abrahmia Ama, staff members (Regional Ministry of Culture and Tourism of the Kassala State). The colleague representing the National Corporation for Antiquities and Museums was Rehab Ismail ElFaki. In the November-December 2019 field season, the team consisted of Andrea Manzo, archaeologist, director of the project and ceramic analyst (Università degli Studi di Napoli "L'Orientale"), Gilda Ferrandino, field director (Università degli Studi di Napoli "L'Orientale"), Elena D'Itria, senior archaeologist (Università degli Studi di Napoli "L'Orientale"), Francesco Michele Rega, PhD candidate and lithic analyst (Università degli Studi di Napoli "L'Orientale") Giusy Capasso, student specializing in physical anthropology (University of Padua), Alessia Cesaro, student specializing in prehistoric archaeology (Sapienza Università di Roma), Diego Capra, PhD candidate and lithic analyst (IPHES, Tarragona), Stefano Costanzo, PhD candidate and geoarchaeologist (Università degli Studi di Napoli "L'Orientale"), Eleonora Minucci, PhD candidate and specialist of computer applications in archaeology (Università degli Studi di Napoli "L'Orientale"), Sara Zaia, surveyor and PhD candidate (Harvard University), Adelaide Marsilio, Nicola Lanzaro and Gianmarco Melito, students (Università degli Studi di Napoli "L'Orientale"), Fatima Mohammed Shifa Mohammed Nour Mahmoud and Yosif Mohammed Yosif Mohammed, MA students (University of Khartoum), Suzan Ibrahim Nafe Khalafalla, Rufida Salih Mohammed Salih and Ahmed Abrahmia Ama, staff members (Regional Ministry of Culture and Tourism of the Kassala State). The colleague representing the National Corporation for Antiquities and Museums was Habab Idriss Ahmed.

The 2019 field seasons were made possible by the following institutions: Ministry of Foreign Affairs (grant 2019), Università degli Studi di Napoli "L'Orientale" (research grants 2017, 2018 and 2019 and grants assigned to the agreements between the Università degli Studi di Napoli "L'Orientale", the University of Khartoum and the National Corporation for Antiquities and Museums, years 2018 and 2019), ISMEO - Associazione Internazionale di Studi sul Mediterraneo e l'Oriente - (research grants 2018 and 2019). The technical contribution and crucial support of the Centro Interdipartimentale di Servizi di Archeologia (CISA) of the Università degli Studi di Napoli "L'Orientale" is acknowledged as well. For the previous field seasons see the reports published in the online journal *Newsletter Archeologia CISA* (http://www.unior.it/index2.php?content_id=3632&content_id_start=1). For a general synthesis on the archaeology of Eastern Sudan see Manzo 2017a.

undergraduate, MA and PhD students, and three students of the University of Khartoum took part in it. For the first time, in the 2019 field seasons PhD students and advanced students of other Italian and foreign universities (University of Padua, University of Rome "Sapienza", IPHES Tarragon, and Harvard University) were also admitted to the field school.

INVESTIGATIONS AT K1 (MAHAL TEGLINOS)

K1 (Mahal Teglinos) is a 10ha. site located East of Kassala in a small valley in the northern sector of the Jebel Taka complex. The site was investigated from 1980 to 1995 by the Italian Archaeological Mission to the Sudan (Kassala) (IAMSK) of the Università degli Studi di Napoli "L'Orientale" (at that time Istituto Universitario Orientale) directed by Rodolfo Fattovich (Fattovich 1993; Fattovich *et alii* 1994).

Previous investigations demonstrated that the site was used at least starting from the 4th millennium BC and up to the 1st millennium AD, although the main occupation phases of the site date to the 3rd and 2nd millennia BC. In Gash Group times (ca. early 3rd - early 2nd millennium BC), two cemeteries were located in the eastern and western sectors of the site, divided by a settlement area. The cemeteries were characterized by the occurrence of monolithic stelae, a so far unique funerary monument typical of this site (Fattovich *et alii* 1994, 14-17; Manzo 2016, 192-194, 2017a, 37-38). In Jebel Mokram Group times (early 2nd millennium BC-early 1st millennium AD) a village was located in the westernmost sector of the site, which may have been previously occupied by a small lake (Manzo 2015, 235; 2017a, 11) or, as suggested by the geoarchaeological investigations conducted in 2017, may have been affected by a water table (Costanzo *et alii* 2020).

Already in 2010, during a visit to the site, it was remarked that erosion was bringing to light large parts of the settlement in the North-western corner of the site, while in the western sector of the site some graves were cut and almost destroyed by streams (see Manzo *et alii* 2011, 28). For this reason, in 2010, 2013, 2014, 2015, 2016 and 2017 five excavation units were investigated in the western part of the site: K1 VI, VII, VIII, IX, XIIand XIII (Manzo *et alii* 2011, 27-30; Manzo 2012, 317-318; 2014b, 377-378; 2015, 231-233; 2016, 192-194; Manzo 2018b, 285-287) (Fig. 2). In 2019 investigations continued in K1 XII and in K1 VI, the row of squares of excavation unit, K1 XIII, were also investigated immediately South of K1 XII, while investigations started in a new excavation unit, K1 XV, immediately West of K1 VI. In addition to that, a further excavation unit, K1 XIV was established South of K1 XII, in order to explore some graves brought to light by erosion in that sector of the site.

K1 VI was a 6×10m excavation unit including the old 2×2 metres area whose topsoil was excavated in 2010 (Manzo *et alii* 2011, 27-30). Investigations in the enlarged excavation unit already started in 2014 and in the November-December 2019 field season excavations were extended to an adjacent excavation unit, K1 XV, in order to get a better understanding of the structures brought to light in the previous campaigns[2].

Apparently, some domestic mud structures were erected in the spot and their collapse originated some concentrations of clay materials. A sequence of living floors characterized by concentrations of ceramic materials, some grinding stones, large pieces of ceramic vessels, post holes and by pits were also brought to light. The upper living floors were partially disturbed by erosion and were characterized by concentrations of fragments of big ceramic trays (Fig. 3), perhaps similar to the ones already recorded in the area (Manzo 2017a, 47, Fig. 42). Among the noticeable finds, the fragments of a large storage vessel, perhaps similar to the ethnographic *gusseba*, made by coiling technique and with a fabric characterized by vegetal temper, reminding of the storage vessels found in 2013, in excavation unit K1 IX (see Manzo 2014b, 378), were collected (Fig. 4). Some of these fragments were found still in the original emplacement of the vessel.

Some post holes characterized the living floors marking the transition from the Gash Group to the Jebel Mokram Goup culture, ca. 1800 BC. Indeed, as already remarked in 2014, all the living floors investigated at K1 VI and XV can be ascribed to the Jebel Mokram Group (early 2nd millennium BC-early 1st millennium BC), except for the earliest ones, which yielded pottery typical of the latest phases of the Gash Group (Manzo 2017c, 99-104). As shown by the C14 dates of samples from K1 VI, the transition between the Gash Group and the Jebel Mokram Group took place ca. 1800 BC (Manzo 2018a). A noticeable find from this area is represented by a fragmentary Kerma-like flask from a Jebel Mokram Group assemblage. Always a Jebel Mokram Group assemblage yielded some fragments of very pure clay, perhaps used for sealing containers, suggesting that administrative activities may have taken place there.

K1 XII was a 10×10m excavation unit immediately North of the sector of the western cemetery partially investigated in 1994 and 1995

[2] The excavation was supervised by G. Ferrandino.

(see Fattovich *et alii* 1994, 16-17), while the only row of squares of excavation unit K1 XIII precisely filled the gap between the excavation units of 1994 and 1995 and K1 XII[3]. Investigation in this area started in 2015, when sixteen tombs were brought to light, twenty-two tombs were added in 2016 and thirty-four in 2017 (Manzo 2016, 192-193; 2017b, 146-147; Manzo 2018b, 286-287). In January and February 2019 twenty-one tombs were brought to light there, while in November-December 2019 sixteen tombs were added.

Few badly damaged tombs of juvenile individuals brought to light in 2019 characterized the uppermost levels of the excavation unit and may be ascribed to the latest phases of use of the cemetery, as also suggested by their contracted or semi-contracted position. The other tombs excavated in 2019 are all characterized by skeletons in extended position, except for double Tomb 78 containing two individuals with contracted legs facing each other in squares K1 XIII, A5-B5 (Fig. 5).

In general, the fact that several of those graves cut or overlap each other testifies the intense and prolonged use of this cemetery, which according to the radiocarbon dates was used from ca. 2700 BC and possibly until the last phases of the Gash Group, at the very end of the 3rd if not in the early 2nd millennium BC (Manzo 2018b, 287). Actually, the pits of some of the tombs with skeletons in extended position were cut from a living floor on top of which structures consisting of stone slabs, stelae, a small, only partially preserved, structure made of granite rocks, and some well-defined concentrations of bones, pottery and burned material, to be interpreted as offering places, were laying. This living floor, dating to the first half of the 3rd millennium BC, is preserved only in the upslope squares of the excavation unit, while downslope it may have been partially damaged by erosion. Other tombs with skeletons in extended and more rarely in contracted position cut or overlap the ones associated with this living floor and are later, as also confirmed by some associated radiocarbon dates to the second half of the 3rd millennium BC. Unfortunately, the living floors from where they were excavated were destroyed by erosion in the excavated area. They can be ascribed to the mature and late phases of the Gash Group (very end of the 3rd mill. BC, if not early 2nd mill. BC). In 2019, some fire places to be ascribed to the later phases of use of the area were also brought to light in the southeastern squares of excavation unit K1 XII, although their meaning remains to be clarified (Fig. 6).

Most of the skeletons in the tombs whose position can be recognized were characterized by bodies in extended position on the back, with orientation varying from North-South with head to South, to East-West with head to East or West. Noteworthy, in addition to the previously mentioned Tomb 78, other three tombs excavated in 2019 and characterized by skeletons in extended position contained two individuals: Tomb 73, Tomb 100 and Tomb 113. Tomb 73 contained two badly fragmented vessels and two skeletons in extended position, whose deposition in the pit was contextual and characterized by a similar East-West orientation, with heads to East and feet to West (Fig. 7). Noteworthy, the legs of the individual laying at the bottom of the pit were cut or broken to fit the body in the pit, while the second individual was put right on top of it, suggesting that this may be a case of human sacrifice, an already attested practice in the western Gash Group cemetery at Mahal Teglinos (Manzo 2017b, 147). Tomb 100 is characterized by the fact that one of the two individuals was curved towards the other with the head almost on the shoulder of the second one. Finally, Tomb 113 contained an adult and a juvenile individual (Fig. 8).

In 2019, for the first time the practice of the reduction of earlier graves to make room to a more recent body, whose pit almost completely overlapped an earlier one, was remarked: this may be the case of Tomb 110, whose reduction may have been operated when Tomb 67, excavated in 2017, was cut. In this specific case the reduction may have taken place when the soft tissues of the body in Tomb 110 were not yet completely perished, and this resulted in the fact that some of the its bones remained in anatomical connection.

The grave goods were usually limited to a rich variety of personal ornaments, including lip plugs, anklets and necklaces made of ostrich eggshell, shells, stone and *faïence* beads (Fig. 9), but some tombs also contained complete vessels, often collapsed and badly fragmented, but mendable, going back to different phases of the Gash Group. Among them, the occurrence of a well-preserved spouted vessel also characterized by a grip should be remarked in Tomb 113 (see again Fig. 8). A badly damaged tomb characterized by a crown of cowry shells, presumably fixed on a leather of fabric support was also brought to light in square K1 XII E5.

K1 XIV was a 10×10m excavation unit immediately South-East of BPLF-Z and BRQA-E, i.e. the sector of the western cemetery partially investigated in 1994 and 1995, where some tombs

[3] The excavation was supervised by Andrea Manzo, Rehab Ismail ElFaki (January-February 2019) and Habab Idriss Ahmed (November-December 2019).

brought to light by erosion and characterized by skeletons in contracted position were already investigated at that time (see Fattovich *et alii* 1994, 16-17)[4].

Indeed, as in the previously investigated parts of this sector of the site, some tombs with skeletons in tightly contracted position were brought to light in excavation unit K1 XIV. Some of them were partially damaged by erosion (Fig. 10). Although characterized by different orientations of the body, these tombs are often characterized by the occurrence of a stone under the skull. Remains of stone arrangements around some of them may also suggest that these tombs may have been associated to stone structures, perhaps stone circles like the ones recorded in the eastern sector of the site, where they overlap part of the eastern Gash Group cemetery (Fattovich 1993, 251-252). On the whole, in January-February 2019, sixteen of these tombs were excavated in K1 XIV, a further one was left unexcavated for future investigations, while a tomb with the skeleton in tightly contracted position brought to light by erosion was excavated nearby, outside the limits of the excavation unit. In November-December 2019, further seven tombs of this type were investigated.

The concentration of tombs of this type in the area, together with the occurrence of tombs cutting or overlapping each other suggests that a formal cemetery was established there and that this cemetery was repeatedly used for a certain period of time. It was previously suggested that this kind of tombs may go back to Jebel Mokram Group times (Fattovich 1993, 264; Manzo 2017c). Some chronological data to support this hypothesis may arrive from the date of the layers which were cut by the graves, consisting of two living floors characterized by concentrations of mature and late Gash Group materials, apparently related to fireplaces (Fig. 11). Nevertheless, based on the investigations conducted in November-December 2019, it appears that some of the tombs were cutting only through the earlier living floor and covered by the later living floor yielding late Gash Group materials. This suggests that the earlier phase of the cemetery may go back precisely to the end of the Gash Group.

Although the meaning of the fireplaces and concentrations of materials characterizing the Gash Group levels in this area remains to be established, the fact that we may have there a formal settlement is so far unconfirmed, as we do not have any evidence of other kinds of structures except for the fireplaces. From a functional point of view, the ceramic assemblage, although later in date, somehow reminds of the food preparation and consumption area brought to light in excavation unit K1 X, in the central sector of the site.

Noteworthy, in K1 XIV E1-E2, under the upper soil strata characterized by the fireplaces, the ceramic concentrations and the tombs, a living floor characterized by a stela was brought to light. This may suggest that in a certain period the western Gash Group cemetery brought to light in excavation units K1 XII-XIII and BPLF-Z/BRQA-E extended to this area, as also shown by the stelae visible in natural profiles cut by some streams immediately West of K1 XIV. On two overlapping living floors in the same squares of the excavation unit, where deeper levels were reached and the stela occurs, several post holes were also evident (Fig. 12). They seem to belong to at least two different phases. To understand their meaning, it will be necessary to excavate to this level the other neighbor squares of the excavation unit.

Finally, the above mentioned cemetery with tombs characterized by skeletons in tightly contracted position did not represent the last phase of use of this sector of the site, as a tumulus containing two skeletons in contracted position was also recorded there (Fig. 13). Apparently, the two skeletons were put in the burial chamber at the base of the vertical pit covered by the tumulus in the same moment. This tumulus, made of stones and even reused grinders, reminds of structures previously investigated at K1, and may go back to the 1st millennium AD (see e.g. Fattovich 1993, 235-236). Interestingly, when the tumulus was built, intense erosion, perhaps due to the emerging in the region of arid conditions, had already taken place, almost completely bringing to light the tombs of the earlier cemetery with skeletons in tightly contracted position.

INVESTIGATIONS AT UA50

UA50 is a site located in the South-western sector of the area endangered by the implementation of the Upper Atbara Agricultural Irrigation Scheme. As shown by the survey conducted in 2010 by the National Corporation for Antiquities and Museums and in 2014 by the expedition, the site was characterized by the possible presence of eroded tombs and by concentrations of shells associated with Pre-Saroba and Saroba (6th - 5th millennium BC) assemblages[5].

[4] The excavation was supervised by Elena D'Itria.

[5] The 2019 excavations at UA 50 were supervised by Alessia Cesaro, Elena D'Itria, Gilda Ferrandino, Habab Idriss Ahmed and Yosif Mohammed Yosif Mohammed.

In 2015 a shell mound was brought to light in excavation unit UA50 I and yielded late Mesolithic materials dating to the late 6th millennium BC, i.e., in terms of regional cultural sequence, Pre-Saroba, while a further test pit (UA50 II) was investigated closer to the Wadi Marmadeb bordering the site to the North (Cesaro 2017; Manzo 2016, 194). In 2016, two excavation units were investigated: UA50 III, and IV, respectively aimed at bringing to light a further shell midden and some of the eroded burials visible on the surface of the site (Manzo 2017b, 147-148). In 2017 three further excavation units were investigated: UA50 V, aimed at investigating a concentration of human bones remarked in 2016 in the western sector of the site, VI, immediately West of UA50 V, with a similar goal of investigating some clusters of bones occurring on the surface, and UA50 VII, where two shell middens were partially brought to light by erosion (Manzo 2018b, 287-288). While in January-February 2019 only geoarchaeological investigations for palaeoenvironmental reconstruction were conducted at the site (see below the Appendix by Stefano Costanzo), in November-December 2019, three excavation units were investigated: UA50 VIII, IX, and X.

In UA50 VIII, a living floor possibly dating to Pre-Saroba/Saroba times was brought to light: it was characterized by concentrations of materials. In UA50 IX two further shell middens were discovered and excavated (Fig. 14). They contained ceramic fragments, most of them characterized by comb impressed patterns made by rocker technique, flaked lithics, some grinding stones, animal bones and a large amount of macrobotanical remains. Finally, a rounded structure, delimited by shells of land snails and containing archeological materials and some grains was brought to light in UA50 X.

Archaeological Survey of the Goz Regeb area

A one-day survey of the sites at the base of Jebel Erembat and Jebel Tarerma, both located inland of Goz Regeb, a traditional ford on the Atbara in the northern part of the region, was conducted also in the perspective of planning more systematic fieldwork in the area[6]. Before surveying, an accurate analysis of the satellite images and of the maps and records available for the area was conducted.

The two hills appear to be surrounded by clusters of tumuli made of rocks, as well as by clusters of archaeological materials (Fig. 15). As also evident from the collections available in the National Museum in Khartoum, the ceramic materials date from prehistoric times to the 16th century AD.

In particular, some sherds with impressed comb decorations and pivoting patterns typical of the Mesolithic and Neolithic phases in the Nile valley and of the Pre-Saroba and Saroba ones in Eastern Sudan were collected in specific spots around the two hills (Fig. 16). The occurrence of late-Neolithic or Butana Group materials (4th millennium BC) characterized the northern and eastern side of the Jebel Tarerma, where some 2nd millennium BC remains were noticed as well. The latest phases of frequentation are represented by extensive collections of Gergaf Group (13th - 16th centuries AD) and possibly Hagiz Group (1st millennium BC - 1st millennium AD) remains occurring around both hills, as well as by the occurrence of red bricks with Christian symbols on the northern side of the Jebel Tarerma (see Ferrandino 2020, in this volume). Such a kind of bricks was already recorded in the area by Ugo Monneret de Villard, who saw some of these bricks reused for building a tumulus (Monneret del Villard 1935, 275). No evidence of the rock ark site marked on the 1939 1:250.000 Sudan Survey map of the area was found.

On the whole, the preservation of the remains appears good, and the area seems suitable for possible future investigations by the expedition.

Archaeological Surveys of the Jebel Haura and Jebel Maman areas

On indication of local informants referring that some archaeological remains were evident on the surface in the area of Jebel Haura, near Jebel Tukulubab, East of Kassala, a preliminary survey was undertaken[7]. Two well defined and previously unknown sites were recorded. The first one consists of a scatter of materials including ceramic fragments and grinding tools, apparently mainly mortars, characterized by a low density of artifacts few kilometers North-West of the jebel (Fig. 17). The sherds seem to belong to the 1st millennium AD phases of the cultural sequence of the region, as also supported by the occurrence of some mat impressed sherds. A further site was located in a small valley crossed by a stream nearby the jebel. The site is well

[6] The survey was conducted by Andrea Manzo, Rehab Ismail ElFaki, Stefano Costanzo, Elena D'Itria, Gilda Ferrandino, Enrico Giancristofaro, Gianmarco Melito, Roua Mohammad Ali Idriss, Suzan Ibrahim Nafe Khalafalla and Rufida Salih Mohammed Salih.

[7] The survey was conducted by Habab Idriss Ahmed, Andrea Manzo, Stefano Costanzo, Adelaide Marsilio, Francesco Michele Rega and Sara Zaia.

evident in the natural profiles cut by the wadi, which also dispersed the archaeological materials from the eroded levels. The materials consist of Gash Group pottery going back to Middle and Classic/Late phases of that culture (end of the 3rd - early 2nd millennium BC).

A one-day survey was also conducted in the area of the Jebel Maman, North-East of Kassala, where an already known Islamic cemetery with *qubba* tombs and some tumulus were recorded in the past years (Fattovich 2010)[8]. The aim of the survey was to assess the state of preservation of the site and to plan possible future activities in the area. Some scatters of sherds were remarked: these ceramics seem to belong to the 1st and 2nd millennium AD phases of the regional cultural sequence.

The survey conducted in November-December 2019 in these two areas, demonstrates the archaeological potential of the region East of Kassala. The site close to the Jebel Haura suggests that the Gash Group settlement pattern also extended East of Kassala. It was already suggested that the investigation of the Jebel Maman area could add information on the adoption of Islam in the region *via* the Red Sea coast and the Eastern Desert, moreover the monumental *qubba* structures occurring there certainly deserve to be systematically recorded and studied.

On the occasion of these surveys, geoarchaeological investigations aimed at palaeoenvironmental reconstruction were started both in the area of Jebel Haura and of Jebel Maman (see below the Appendix by Stefano Costanzo).

FINAL REMARKS

The January-February and November-December 2019 excavations at Mahal Teglinos (K1) were very fruitful. Indeed, the new investigations in the western Gash Group cemetery in excavation units K1 XII and XIII added fresh evidence on the Gash Group (mid-3rd - early 2nd millennium BC) funerary rituals, style of life and society, as well as on their development through time, to be compared to and integrated with the data already available for the eastern Gash Group cemetery extensively investigated in the Eighties.

Investigations in excavation unit K1 XIV showed that a cemetery characterized by tombs with individuals in tightly contracted position characterized that part of the site in the last phases of the Gash Group (first two centuries of the 2nd millennium BC) and in Jebel Mokram Group times (early 2nd - early 1st millennium BC). Therefore, excavation unit K1 XIV provided evidence on the development of the funerary habits in the phase of cultural innovation and change marking the transition from Gash Group to Jebel Mokram Group.

Always at Mahal Teglinos (K1), the continuation of the investigations in excavation units K1 VI and XV provided insights into the organization of Jebel Mokram Group (early 2nd - early 1st millennium BC) and late Gash Group (early 2nd millennium BC) settlement areas, and on the social organization and economy of those phases.

The investigations conducted at UA50, after the completion of the analysis of the materials and of the collected samples promise to greatly increase our knowledge on the 6th - 5th millennium BC peopling of the region and will provide new sound data on the animal and vegetal species exploited as well as on the environmental setting in those phases, certainly characterized by more humid conditions.

Finally, the surveys undertaken North and East of Kassala showed the potentialities of future systematic archaeological explorations in those areas.

As far as the geoarchaeological activities are concerned (see below the Appendix by Stefano Costanzo), they are providing crucial data on the general environmental history of the region, as well as on the hydrogeological threats endangering the heritage in the present. The related study of the sources of the raw materials used to produce the grinders and the funerary stelae will also add important insights to our understanding of the Gash Group and Jebel Mokram Group society and economy.

APPENDIX - GEOARCHAEOLOGICAL ASSESSMENT *(S. Costanzo)*

UA50 and the open plain between the Atbara and the Gash Rivers

In January-February 2019, the investigations at UA50 mainly focused on gathering data for the reconstruction of the palaeoenvironmental setting of the area along the Wadi Marmadeb. The Wadi Marmadeb is a seasonal waterstream that flows roughly from East/North-East to West/South-West for 45km from the plain west of Jebel Abu Gamal and into the Atbara River just downstream of the city of Khashm el Girba (Fig. 18). It has an average width of 8m and depth of 2m, but it reaches a width of 100m in the last few km before joining the Atbara. The observation of the current geomorphological settings, and the study of the pedostratigraphy underlying the archaeological site,

[8] The survey was conducted by Habab Idriss Ahmed, Stefano Costanzo, Sara Zaia and Suzan Ibrahim Nafe Khalafalla. An assessment of the Jebel Maman site was recently presented by Habab Idriss Ahmed at the 14th International Conference for Nubian Studies held in Paris in September 2018.

provided interesting insights about what kind of fluvial environment the settlers of the plains between the Atbara and the Gash Rivers relied on during Mesolithic times. A longitudinal section excavated along the wadi's southern bank, revealed a +2.5m thick[9] reddish/maroon vertisol that developed from a consolidated massive deposit of alluvial silt, topped by a ~30cm thick layer of contemporary unconsolidated flood laminations that extend for ~50m both sides of the wadi. Samples for thin section analysis were collected for further studies. Satellite images reveal that the identified reddish deposit has a consistent width of about 2-2.5km along the whole course of the Wadi Marmadeb; moreover, the wadi flows in the middle of this deposit, occupying a topographic low that can be easily observed with Digital Elevation Model (DEM) data. Such a large alluvial feature is diagnostic of a flooding large river, therefore incompatible with the present-day small wadi. The most likely interpretation, as for current understanding, is that the Wadi Marmadeb set in the middle of the silted riverbed and flood deposits left by a palaeochannel of the Gash River after an avulsion, probably caused by local minor tectonic adjustments, pushed the Gash northward leaving a depression in which seasonal water kept collecting with less intensity. The position and the relatively good preservation status of site UA50 and others that are found along the same wadi, provide information about the chronology of the evolution of the fluvial landscapes as described. The sites, in fact, sit really close to the present-day wadi (just a few tens of metres), and consist of very thin superficial spreads of lithics, potsherds, faunal remains, burials and traces of ephemeral structures, sometimes mildly intertwined with the previously mentioned thin, unconsolidated laminations laid by the wadi's gentle floods. Such a delicate environment could not have faced floods comparable with those of the modern Gash River without being completely destroyed, therefore it is reasonable to speculate that the Mesolithic communities living in those locations were exploiting a very similar fluvial environment to the one we observe nowadays, sitting on an already fossilized large palaeochannel and perhaps even seeing the very same wadi. Most likely, the same explanation is also valid for more northern sites that are similarly set near small streams or static bodies of water that occupy relict riverbeds, remnants of many northward avulsions of the Gash River towards its present position.

[9] The base was not reached due to excessive compaction of the deposit.

Therefore, work-in-progress studies on the Eastern Sudan Plain's riverscape's evolution and palaeoclimate point to the idea that the Gash River reached its current position during the Late Pleistocene/Early Holocene, and that the Holocene archaeological communities settled in a landscape that was geographically similar to the current one, composed by fertile soils and benign water-bearing landforms whose hospitability was even increased by the more favourable rainfall regime of the Early-Middle Holocene (African Humid Period).

Mahal Teglinos (K1)

At Mahal Teglinos (K1) a pollen sampling has been executed on the wadi-exposed escarpment "K1 SEZ.GEO.1", in the western sector of K1, where a well-studied organic horizon was recorded (see Costanzo *et alii* 2020), to further develop the understanding of the evolution of the Holocene ecosystem around the Jebel Taka.

In the western sector of Mahal Teglinos (K1) a system of cut-and-fill terraced features was recorded and studied. The area shows a missing volume of a few hundreds of cubic metres of archaeological and geological stratification that was eroded by hillside water runoff; the aim of the survey was to gather information on the timing of the event. A 0.5×12m test trench was excavated perpendicularly across a small terraced system. A few archaeological artefacts were recovered, but the bottom laminations of one of the gully fills revealed some plasticized playing cards, seemingly from a 1990's Chinese production line. This unexpected find represents evidence that the intensity of the hillside runoff may have increased in the last decades, generating dramatic erosion and stratigraphic voids. This is not only relevant in terms of the threats that soil loss and flash floods pose for the archaeological heritage, but also for what concerns the evaluation of the impact that the recent and ongoing climatic changes, with the tightening of seasonal polarity and increment of catastrophic rainfall-induced flooding events, is having in the broader region.

Jebel Tareg (JT)

A modern gneiss quarry was surveyed at Jebel Tareg (JT), just 1.5km East of the Jebel Taka. This quarry was commercially exploited with intensive machining and detonations, resulting in the exposure of the whole Quaternary sequence east of the Jebel Taka. The sequence has a thickness of roughly 5m and sits directly on top of the Precambrian gneiss basement, which is locally dragged and tilted upwards by the younger granite intrusions of the Jebel Taka. It comprises a tight alternation of

alluvial/colluvial silts and sands, whose lower strata seem to have undergone pre-Holocenic soil formation processes although no targeted analyses were carried out. Nevertheless, an interesting feature was observed, recorded and sampled: the sequence is capped by a ~1m thick dark greyish-brown finely cracked vertisol, very similar in appearance to the well-studied organic horizon of site K1's sequence (Fig. 19). Radiocarbon dating placed the horizon in the first half of the 5th millennium BC[10], confirming that it is chronologically related to the one recorded at K1. This data represent a precious addiction to the interpretation of the palaeoenvironmental of the surroundings of the Jebel Taka, indicating that the rainfall regime of the Early-Middle Holocene provided favourable conditions not only for the formation of palustrine microenvironments in secluded valleys with near-surface impermeable bedrock - as in the case of Mahal Teglinos - but for the sustenance of open plain rainfed humified soils as well. Micromorphological analyses will be conducted on a sample of said soil, to further the understanding towards the land-use of the area.

Finally, stone samples were taken from JT and other locations around the Jebel Taka, in order to start a systematic program aimed at identifying the sources of raw materials used for producing macrolithic tools and the stone stelae occurring in the Gash Group funerary areas at Mahal Teglinos[11].

Jebel Haura and Jebel Maman

In addition to the already recorded archaeological activities at Jebel Haura, some geoarchaeological studies were also started there, as it was remarked that some Gash Group artefacts surface from a tall retreating escarpment once again cut by a hillside runoff-fed wadi.

The exposed stratigraphy is a few hundred metres long and reaches a height of 4m at its tallest point a few tens of metres downstream of the steep rocky slope. It is composed of several intertwining wadi-bed and colluvial sandy/gravelly deposits, some possibly aeolian layers and some horizontal units of potsherds and bone remains buried 1.5-2m under current topographic surface. The section has been thoroughly sampled for conducting several analyses aimed at determining the nature of each stratum and the timing of the processes responsible for their formation. Micromorphological analyses are planned regarding the artefacts-bearing layers, in order to clarify whether they sit in pristine deposition or they were mobilized and redeposited by fluvial/colluvial activity. The study of this sequence may help to further widen the picture of the palaeoenvironmental changes in the region from the Early-Middle Holocene to present time, with more data being gathered from locations consistently farther from the Jebel Taka and the PalaeoGash plains. Such is the case for the latest survey at Jebel Maman, a small cluster of granitic and meta-sedimentary inselbergs located 100km North/North-East of the Jebel Taka, where a brief observation of the geomorphological settings and some small gully-exposed sections outlined a high potential for the presence of significant pedological features that could once again add valuable information to the broader picture. Future activities in the location are being evaluated.

[10] DSH9576_HA, 5802+/- 40 BP, Cal. 2 sigma (IntCal13 cal. curve) 4767 BC - 4755 BC (2%), 4742 BC - 4737 BC(1%), 4729 BC - 4545 BC (97%).

[11] This specific research is conducted by Adelaide Marsilio.

Acknowledgements

The members of the Expedition would like to express their gratitude to the Director General of the NCAM, to all the NCAM staff and especially to the colleagues Rehab Ismail ElFaki and Hababb Ahmed Idriss, for their invaluable help and support. Many thanks are also due for the support, collaboration and hospitality to the Regional Ministry of Culture, Media and Tourism of the Kassala State, to the Ambassador of Italy to the Sudan and to all the staff members of the Italian Embassy. Finally, we would like to thank our colleagues Intisar Soghayroun Elzein and Ahmed Hussein Abdelrahman Adam of the Department of Archaeology of University of Khartoum for their support and warm welcome in Khartoum.

References

Cesaro, A. (2017) The Mesolithic Period in Eastern Sudan: Archaeological Investigation at UA 50 (Wadi Marmadeb, Kassala Region), Preliminary Analysis and Research Perspectives, *Newsletter di Archeologia CISA*, Vol. 8, pp. 93-102.

Costanzo, S., Cremaschi, M., Manzo, A. (2020) Geoarchaeological Investigations at Mahal Teglinos (K1, Kassala). New insights into the Paleoenvironmental History of Eastern Sudan, D. Usai, S. Tuzzato, M. Vidale (eds.) *Tales of Three Worlds. A Tribute to Sandro Salvatori*, Cambridge, pp. 301-307.

Fattovich, R. (1993) Excavations at Mahal Teglinos (Kassala), 1984-1988. A preliminary report, *Kush*, 16, pp. 225-287.

Fattovich, R. (2010) The Early Spread of Islam in the Eritrean-Sudanese Lowlands (ca. AD 800-1500) from an Archaeological Perspective, A. Gori, B. Scarcia Amoretti (eds.) *L'Islam in Etiopia. Bilanci e prospettive* - (*Civiltà del Mediterraneo* 16-17), Roma, pp. 89-107.

Fattovich, R., Manzo, A. Usai, D. (1994) Gash Delta Archaeological Project: 1991, 1992-93, 1993-94 field seasons, *Nyame Akuma*, 42, pp. 14-18.

Ferrandino, G. (2019) *Newsletter di Archeologia CISA*, Vol. 10, pp. 83-93.

Manzo, A. (2011) with contributions by A. Coppa, A. Beldados Aleho, V. Zoppi, *Italian Archaeological Expedition to the Sudan of the University of Naples "L'Orientale". 2010 Field Season*, Napoli.

Manzo, A. (2012) with contributions by A. Beldados Aleho, A. Carannante, D. Usai, V. Zoppi, *Italian Archaeological Expedition to the Sudan of the University of Naples "L'Orientale". 2011 Field Season*, Napoli.

Manzo, A. (2012) The Italian Archaeological Expedition to the Eastern Sudan of the Università degli Studi di Napoli "L'Orientale". An Overview of the 2010 and 2011 Field Seasons, *Newsletter di Archeologia CISA*, Vol. 3, pp. 313-335.

Manzo, A. (2013) The Italian Archaeological Expedition to the Eastern Sudan of the Università degli Studi di Napoli "L'Orientale". An Overview of the 2012 Field Season, *Newsletter di Archeologia CISA*, Vol. 4, pp. 253-271.

Manzo, A. (2014a) Beyond the Fourth Cataract. Perspectives for Research in Eastern Sudan, J.R. Anderson, D.A. Welsby (eds.) *The Fourth Cataract and Beyond. Proceedings of the 12th International Conference for Nubian Studies, 1-6 August 2010, London*, pp. 1149-1157.

Manzo, A. (2014b) Preliminary Report of the 2013 Field Season of the Italian Archaeological Expedition to the Eastern Sudan of the Università degli Studi di Napoli "L'Orientale", *Newsletter di Archeologia CISA*, Vol. 5, pp. 375-412.

Manzo, A. (2015) Italian Archaeological Expedition to the Eastern Sudan of the Università degli Studi di Napoli "L'Orientale". Preliminary Report of the 2014 Field Season, *Newsletter di Archeologia CISA*, Vol. 6, pp. 231-240.

Manzo, A. (2016) Italian Archaeological Expedition to the Eastern Sudan of the University of Naples "L'Orientale". Preliminary Report of the 2015 Field Season, *Newsletter di Archeologia CISA*, Vol. 7, pp. 191-202.

Manzo, A. (2017a) *Eastern Sudan in its Setting. The archaeology of a region far from the Nile Valley* (*Cambridge Monographs in African Archaeology* 94), Cambridge.

Manzo, A. (2017b) Italian Archaeological Expedition to the Eastern Sudan of the University of Naples "L'Orientale" and ISMEO. Preliminary Report of the 2016 Field Season, *Newsletter di Archeologia CISA*, Vol. 8, pp. 145-157.

Manzo, A. (2017c) The Territorial Expanse of the Pan-Grave culture thirty years later, *Sudan & Nubia*, 21, pp. 98-112.

Manzo, A. (2018a) The Chronology of the Transition between the Gash Group and the Jebel Mokram Group of Eastern Sudan (2nd Millennium BC), M. Honegger (ed.) *Nubian Archaeology in the XXIst Century. Proceedings of the Thirteenth International Conference for Nubian Studies, 1st-6th September 2014, Neuchâtel*, pp. 263-273.

Manzo, A. (2018b) with contributions by G. Capasso, Italian Archaeological Expedition to the Eastern Sudan of the University of Naples "L'Orientale" and ISMEO. Preliminary Report of the 2016 Field Season, *Newsletter di Archeologia CISA*, Vol. 9, pp. 285-302.

Monneret de Villard, U. (1935) *La Nubia medioevale. Volume primo, inventario dei monumenti* (*Mission Archéologique de Nubie* 1929-1934), Le Caire.

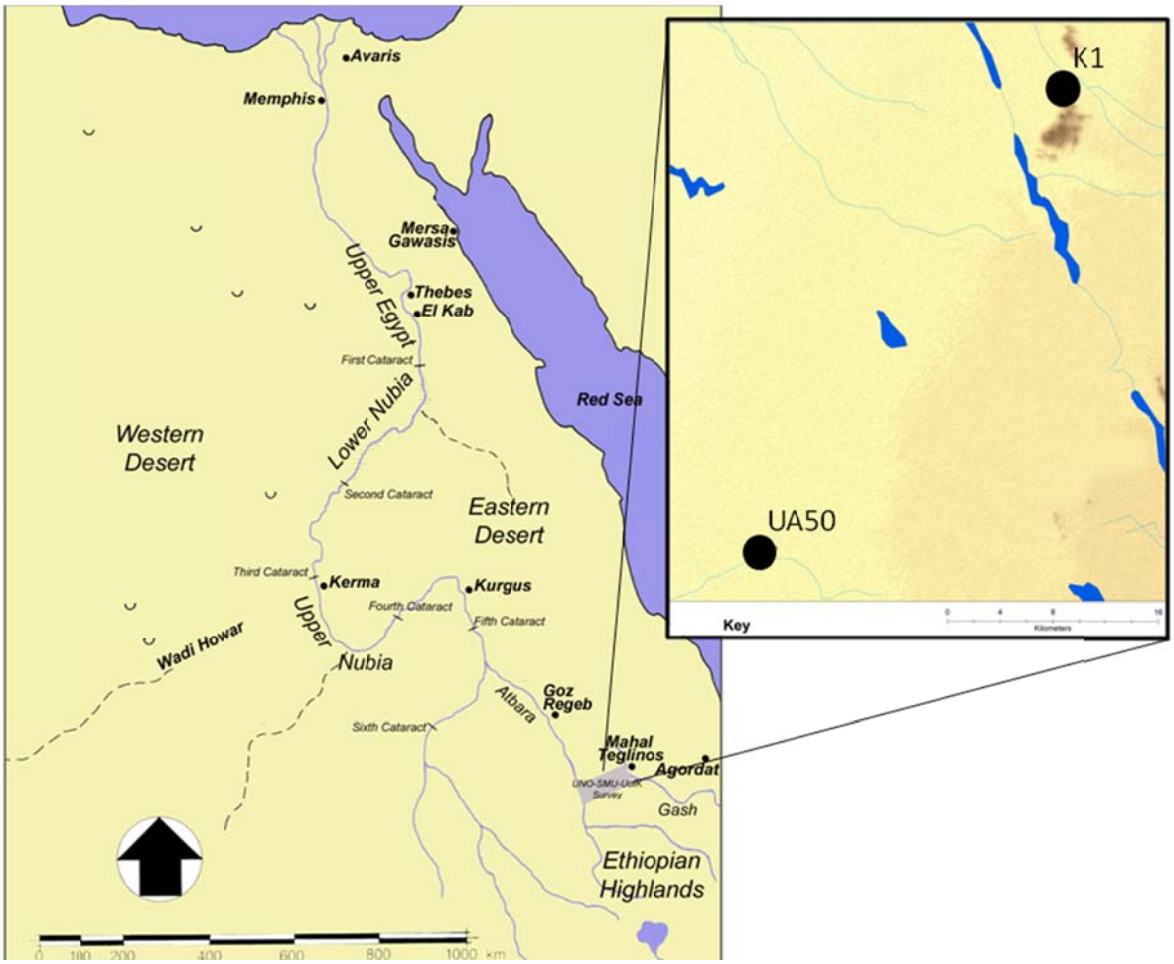

Fig. 1 - Map showing the location of the area under investigation, and the sites investigated in the January-February 2019 field season

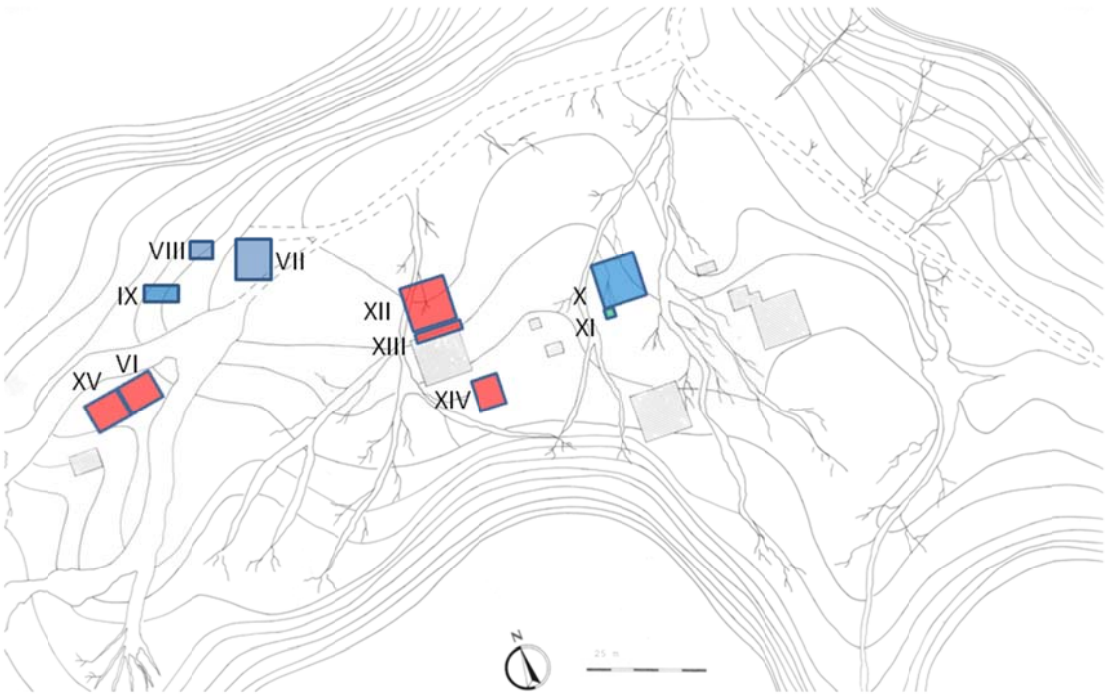

Fig. 2 - Map of the excavation units investigated at K1 - Mahal Teglinos in Eighties and Nineties (gray color), 2010-2017 (blue color), and January-February 2019 (red color)

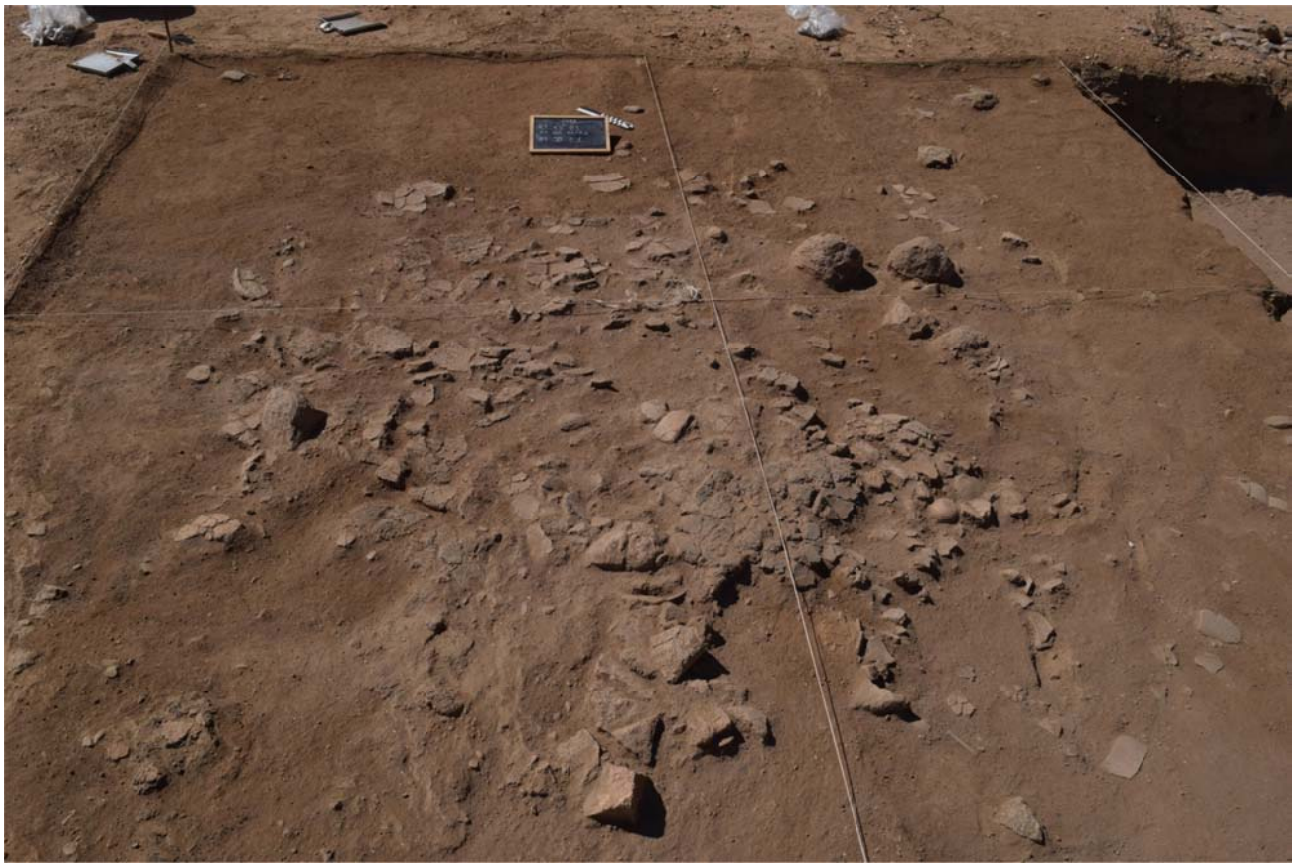

Fig. 3 - Concentration of big ceramic trays on an eroded Jebel Mokram Group living floor likely to date to the mid - /second half of the 2nd millennium BC in excavation unit K1 XV

Fig. 4 - Fragment of the rim of a ceramic storage jar perhaps similar to the ethnographic *gusseba* from a Jebel Mokram Group living floor of the first half of the 2nd millennium BC brought to light in excavation unit K1 VI

Fig. 5 - Tomb 78 containing two individuals with contracted legs facing each other, in squares K1 XIII A5-B5

Fig. 6 - Fire place delimited by stones brought to light on the eastern limit of the northeastern squares of excavation unit K1 XII

Fig. 7 - Tomb 73 containing two overlapping skeletons in extended position with two badly fragmented vessels in K1 XII B5-C5

Fig. 8 - Tomb 113 containing the skeleton of an adult individual and a juvenile individual, whose skull can be seen on the left, in squares K1 XII E4-E5. To be noted the associated spouted vessel and the fact that the legs were cut by a later tomb

Fig. 9 - Detail of the damaged skull and upper trunk of skeleton in Tomb 71, squares K1 XII D2-D3, with a large variety of personal ornaments still *in situ*

Fig. 10 - Tomb 7, characterized by a skeleton in tightly contracted position in squares K1 XIV C3-D3

Fig. 11 - Concentration of Gash Group sherds in square K1 XIV C3

Fig. 12 - Living floor with several post holes and a stela in square K1 XIV E2

Fig. 13 - Two skeletons in contracted position at the base of the funerary pit of a tumulus in square K1 XIV C4

Fig. 14 - Ongoing excavation of a shell midden in squares UA50 IX, C1-2 and D1-2

Fig. 15 - Concentration of tumulus at the southwestern foot of Jebel Tarerma, near Goz Regeb

Fig. 16 - Sherds going back to Mesolithic and Neolithic phases from the foot of Jebel Tarerma, near Goz Regeb

Fig. 17 - A grinding stone on the surface of a site in the Jebel Haura area

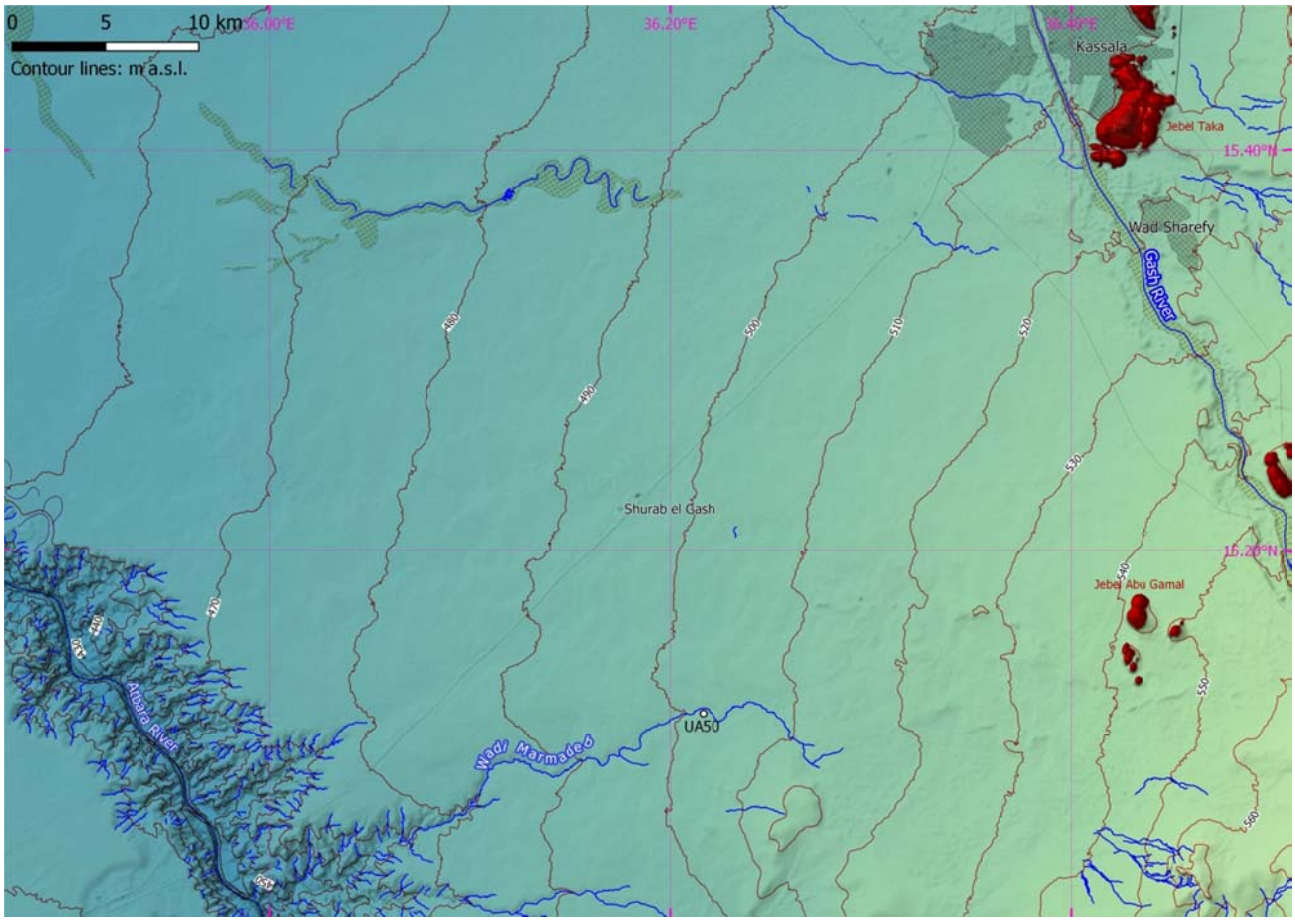

Fig. 18 - DEM of the lower portion of the investigated area in Eastern Sudan. The blue-green gradient assists the interpretation of the contour lines for flat areas, red is used to represent inselbergs. The relatively large depression that the Wadi Marmadeb occupies can be read in the wide upstream-pointing cusps. Data sourced from TanDEM-X 90m, tiles N15E035 N15E036. Software: QGIS 3.4

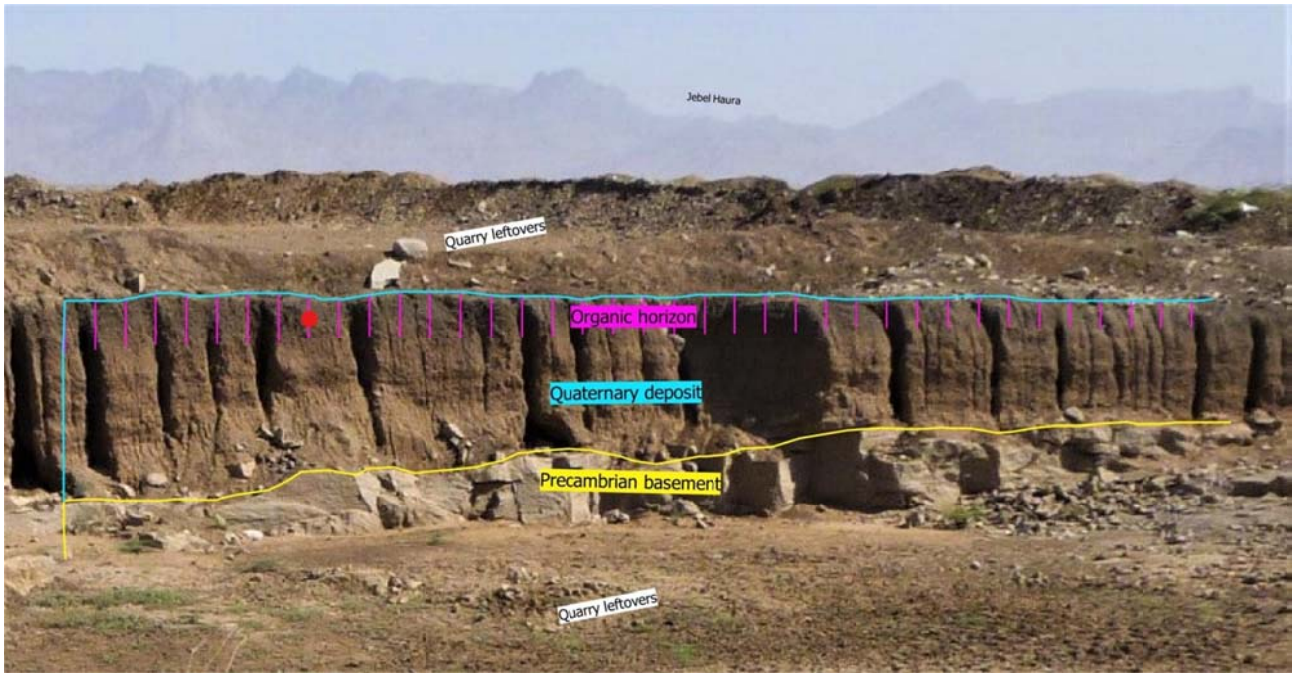

Fig. 19 - View from South-West of the stratigraphy exposed at JT site. From bottom to top: 1) Precambrian gneiss basement, showing very little alteration along its surface of contact with the upper unconsolidated sediments; 2) Quaternary alluvial/colluvial stratification; 3) organic enriched horizon that developed on the summit of the Quaternary deposits. The red dot indicates the location of the C-14 and thin section samplings